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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/728,777

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Matthew L. Cooper

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EXAMINER

MARIAM, DANIEL G

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

08/22/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/728,777

Applicant(s)

COOPER ET AL.

Examiner

DANIEL G. MARIAM

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 25-50 is/are rejected.
- 7) ☒ Claim(s) 10-24 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 2/26/04.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application
- ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claim 24 is objected to because of the following informalities: claim 24 contains two periods. Each claim begins with a capital letter and ends with a period. Periods may not be used elsewhere in the claims except for abbreviations (See MPEP 608.01(m)). Appropriate correction is required.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claims 25-48 are rejected under 35 U.S.C. 101 because the claimed invention are directed to non-statutory subject matter as follows. Claim 25 defines a "storage medium"

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embodying functional descriptive material. However, the claim does not define a computer-readable medium or computer-readable memory and is thus non-statutory for that reason (i.e., “When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized” – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on “computer-readable medium encoded with a computer program” or equivalent; assuming the specification does NOT define the computer readable medium as a “signal”, “carrier wave”, or “transmission medium” which are deemed non-statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

Since claims 26-48 directly or indirectly depend on claim 25, they are also rejected under 35 U.S.C. 101, for the same reason set forth above for claim 25.

Examiner's Note

3. Examiner has cited particular columns and line numbers or figures in the references as applied to the claims below for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant, in preparing the responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-2, 4, 6, 8-9, 25-26, 28, 30, 32-33 and 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gong, et al. (7,151,852).

With regard to claim 1, Gong, et al discloses a method of summarizing a stream of ordered information, i.e., video sequence (See for example, Fig. 1), comprising: generating a similarity matrix for the stream of ordered information decomposing the similarity matrix based on a probabilistic matrix factorization, i.e., Singular Value Decomposition (SVD), into a plurality of component matrices; determining, for each component matrix, a representative portion, i.e., video cluster other than video cluster whose shot Θ_i , of the stream of ordered information; extracting the determined representative portions (See for example, col. 7, line 40 – col. 8, line 59; and items 101-104, in Fig. 1); and combining the extracted representative portions into a summary of the stream of ordered information (See for example, col. 8, line 60 – col. 10, line 28; and item 105, in Fig. 1). Gong, et al. does not expressly use the language a probabilistic matrix factorization. However, it would have been obvious to one having ordinary skill in the art that the SVD used in Gong, et al is in fact a likelihood matrix factorization technique applied to refine/reduce the dimensionality of the feature space, and possibly the noise so as to create a non-redundant video sequence summarization.

With regard to claim 2, the method of claim 1, wherein the stream of ordered information comprises at least one of at least video information, audio information, still image information, and text information (See for example, item 101, in Fig. 1).

With regard to claim 4, the method of claim 1, wherein generating the similarity matrix for the stream of ordered information comprises: windowing, i.e., 3x3 block, the stream of ordered information, parameterizing, i.e., color histogram, the windowed stream of ordered information, and determining the similarity matrix of the parameterized windowed stream of ordered information (See for example, col. 6, line 64 – col. 7, line 24).

With regard to claim 6, the method of claim 4, wherein the stream of ordered information comprises at least video information, and parameterizing the stream of ordered information comprises parameterizing the stream of ordered video information based on at least *one of* a histogram, ortho-normal projections, deriving a decimated image from DC coefficients of compression macroblocks and discrete cosine transforms (See for example, col. 6, line 64 – col. 7, line 24)

With regard to claim 8, the method of claim 1, further comprising determining a number of the component matrices of the ordered information based on a function (See for example, Equations 1-3).

With regard to claim 9, the method of claim 8, wherein determining the number of the component matrices of the ordered information based on a function comprises determining the number of the component matrices of the ordered information based on a probabilistic

factorization rank of the similarity matrix for the ordered information (See for example, col. 7, line 45 – col. 8, line 40).

Claim 25 is rejected the same as claim 1. Thus, argument analogous to that presented above for claim 1 is applicable to claim 25. As to the storage medium storing a set of program instructions (See for example, col. 12, lines 29-63; and col. 7, lines 20-24).

Claims 26, 28, 30, 32, and 33 are rejected the same as claims 2, 4, 6, 8, and 9 respectively. Thus, arguments analogous to those presented above for claims 2, 4, 6, 8, and 9 are respectively applicable to claims 26, 28, 30, 32, and 33.

Claim 49 is rejected the same as claim 1 except claim 49 is an apparatus claim. Thus, argument similar to that presented above for claim 1 is applicable to claim 1. Applicants' attention is further invited to column 12, lines 29-63.

Claim 50 is rejected the same as claim 4 except claim 50 is an apparatus claim. Thus, argument similar to that presented above for claim 4 is applicable to claim 50.

6. Claims 3, 5, 7, 27, 29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gong, et al. as applied to claims 1-2, 4, 6, 8-9, 25-26, 28, 30, 32-33 and 49-50 above, and further in view of Xu (2006/0065102).

With regard to claim 3, Gong, et al. (hereinafter "Gong") discloses all of the claimed subject matter as already discussed above in paragraph 5, and which is incorporated herein by reference. Gong also discloses still, i.e., static, image and text information (See for example, col. 6, lines 26-43 and col. 8, lines 25-29 respectively). Additionally, the video summarization of

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Gong does also uses a total of two hours of CNN news video programs which obviously contain, although not mentioned, audio information (col. 15, lines 19-37). Nonetheless, Xu (See for example, Figure 1) teaches this feature. Therefore, it would have been obvious to one having ordinary skill in the art to incorporate the teaching as taught by Xu into the system of Gong, and to do so would at least allow the system Gong the capability of creating summarization of an audio data.

With regard to claim 5, the method of claim 4, wherein the stream of ordered information comprises at least audio information, and parameterizing the stream of ordered information comprises parameterizing the stream of ordered audio information based on at least one of a STFT Fourier Transform, a Mel-Frequency Cepstral Coefficients Analysis, a spectrogram, a Fast Fourier Transform and wavelet decomposition (See for example, paragraph 0023 of Xu; and col. 7, lines 35-39 of Gong).

With regard to claim 7, the method of claim 4, wherein the stream of ordered information comprises at least text information, and parameterizing the stream of ordered information comprises parameterizing the stream of ordered text information based on at least *one of* a sentence, a paragraph, a meta-data information, a term-frequency inverse-document frequency information and part of speech information (See for example, paragraphs 0002 and 0004 of Xu).

Claims 27, 29 and 31 are rejected the same as claims 3, 5 and 7 respectively. Thus, arguments analogous to those presented above for claims 3, 5 and 7 are respectively applicable to claims 27, 29 and 31.

Allowable Subject Matter

7. Claims 10-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent No. 6,782,394 and US Patent Application Publication No; a publication to Ando, et al. 2006/0210157. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL G. MARIAM whose telephone number is 571-272-7394. The examiner can normally be reached on M-F (7:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MATTHEW BELLA can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated

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information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


DANIEL G MARIAM
Primary Examiner
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August 20, 2007